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that is at present known. How would it have astonished the learned sages of Greece and Rome, had they been told, that the brilliant diamond which adorned the beauties of ancient days, and which still adorns our modern belles, was nothing but *charcoal* deprived of its oxygen! The combinations of carbon with the earth &c., are called carbonates. Thus chalk and marble are carbonates of lime; and pearl ash is a carbonate of pot-ash. By the action of fire and other chemical processes, carbon can be disen-

gaged from these substances, when it assumes the aerial form, and then it is called fixed air, or carbonic acid gas. Thus by burning lime stone in a kiln, the carbon is driven out, in the form of air, or carbonic acid gas, and then the lime stone is converted into what we commonly call lime. So that lime stone and pure lime, with which we make mortar, differ in nothing but only by the former losing its carbon, and the latter, probably acquiring a larger portion of oxygen.

J. GETTY.



GLEANINGS OF NATURAL HISTORY IN IRELAND.—No. V.

THE CORVORANT—*PELICANUS CARBO*.

TO THE EDITOR OF THE DUBLIN PENNY JOURNAL.

SIR,—Having been much gratified at the favourable reception which my description of the Sea Gull, in your

37th Number, (communicated to you through a friend,) obtained in your columns, I am encouraged to hope that the following notice of the *Pelicanus Carbo*, or Corvorant,

may not be unacceptable. Although it is a bird not uncommon on our shores, it seems to me that many highly interesting particulars of the wonderful manner in which it is fitted by the hand of nature for its singular habits and mode of life, have, notwithstanding, been either wholly passed over, or too slightly touched on by most naturalists whose works have fallen in my way. The construction of its head and throat is most astonishingly adapted to permitting the bird to swallow, whole, the fish on which it preys, of such amazing size, that this, united with the appetite necessarily resulting from its rapidity of digestion, has caused the name of the bird to pass into the well-known and familiar epithet commonly applied to voracious persons.

While writing the following lines, I have had before me a remarkably fine specimen of this bird, lately shot in the vicinity of the Bay of Dublin, and from which an accurate drawing has been made for your Journal, by a very talented gentleman; and the bird is now in the collections of Thomas Bewley, Esq. Its length is two feet ten inches; the extent of its wings, four feet seven inches; and it weighed five pounds and three quarters. The bill, which is four inches in length, is surrounded by a naked skin, of a yellow colour, part of which deepens to an orange shade underneath and in front of the eye. This skin beneath the under mandible, forms part of the great pouch of the bird; it is met by a large crescent shaped patch of white feathers upon the throat, about an inch wide, coming from behind the eyes, and running up in an angle into the skin just mentioned. Two glossy blue black patches extend backwards on each side of the head, from the eye to the auricle; the top of the head and half-way down the neck is beautifully dotted, or rather studded with snow-white feathers, which being much longer than the black feathers of the neck, project over them.—From the back of the skull, to about four inches down the neck, there extends a row of long black glossy feathers which form a beautiful mane, the absence of which, at a particular season of the year, has led most naturalists into the mistake of dividing the one bird into two—denominating it at one time *Pelecanus Carbo*, and at another, *Pelecanus Cristatus*. The iris of the eye is of a beautiful emerald green. The entire body, wings, and tail, are of the same glossy black colour, but beautifully shaded, the scapulars and greater and lesser wing-covers being of a greenish bronze hue, and the feathers of the latter are fringed, especially at the outer edge, with jet black. The quills and bastard wings are rather of a sooty black; so, also, is the tail, which is fan-shaped, and consists of fourteen feathers, each about six inches in length, and one in breadth; when closed, the tail is but about three inches in width, but it is capable of being expanded to ten inches, evidently to assist the animal in guiding its motions when swimming or diving, as with a rudder.

Such is the winter dress of this bird; but in the pairing season, which begins about the month of February, it, in common with almost all other sea birds, undergoes a striking change of plumage; one of the most remarkable circumstances in which is, that both the male and female, and not the former only, as some have said, display a large patch of snow-white feathers, about an inch and a half in diameter, on the outer surface of each thigh, which is, however, partly covered by the wing. This change of dress is retained for some time, till the young ones are reared.

The thighs and legs are short, strong, and muscular. The tarsus is covered with numerous rows of small scales, which are very regular on the toes, the divisions between which assume a dirty white shade; the toes are four in number, and are connected by a strong web; the outer toe, which is the longest, consists of five joints; the second of four, the third of three, and the last or inner one has but two. The claws are half an inch long, strong and hooked, in order to give the bird a secure footing on the rocks where it perches; the second claw is serrated on the inside edge.

The legs are placed so far back on the body, that the sole of the foot alone would afford but an insufficient sup-

port for this heavy bird, and accordingly nature has provided it with a strong, yet soft and elastic muscle, which, running down the back of the leg, enables the creature to rest its weight on the whole length of the tarsus. Yet even this would hardly be adequate to assist in preserving its equilibrium, if it were not for a seemingly awkward elongation of its body underneath, towards the vent, upon which the bird securely props himself when using the exertion sometimes necessary to swallow its food. There is another singular circumstance which, if I might hazard a conjecture, I should say is probably instrumental in effecting the same purpose, namely, in preserving the bird's balance when straining its throat to swallow a larger fish than usual; this is the occurrence of a remarkable bayonet-shaped bone which projects from the back of the skull, where the vertebrae join it, but totally separate and distinct from them; it is enclosed in a strong muscle, which is inserted in two grooves, or hollows, in the hinder part of the skull; this bone is about an inch and a quarter long, and descends over two of the vertebrae; the only imaginable purpose to which this can serve, as I conceive, is to act as a *fulcrum* or prop to the head, to prevent its being thrown too far back in any extraordinary exertion, and perhaps at the same time to assist, by pressure, in enabling the bird to expand his jaws to their utmost extent.

This bird has often to seek his food at a great depth beneath the surface of the ocean. The late Sir Charles Giesecke informed me, that one day fishing on the coast of Greenland, he caught one of them on a hook baited with the shellfish called *Buccinum Undatum*, or Waved Whelk, at a depth of forty German fathoms. Their skins are much used by the natives of Greenland for making shirts, the feathers being worn inside for warmth.

The apparatus for breathing with which the Corvorant is provided, is particularly worthy of attention. It has been long since observed, that it has no external nostrils, or, as some have said, no nostrils at all. The fact is, as I think I have satisfactorily ascertained, that the nostrils are situated inside, in the palate or roof of the mouth; the air taken in by these is conveyed through the bones of the skull by means of a small tube composed of a tough substance, compressible by two strong fleshy muscles, and thus it passes into the windpipe. This is situate at the root of the tongue, and instead of being close to the vertebrae, as in other birds, is quite separate from them, and is attached to the under jaw by means of the tongue bones; the object of this arrangement being, I suppose, to prevent the choking which would result from the compression of the windpipe, if it were in its usual position, by the swallowing of food in large masses, and which would compel the bird, as it were, to cough up his food again. It might at first appear that the necessary consequence of the bird's opening its bill in order to inhale the air through the internal nostrils we have mentioned, would be that the water would rush into its throat at the same time, but this difficulty is provided for by a hinge or joint a little below the eye, at the place where the upper mandible unites with the skull, by means of which the bird, by throwing it up, can open its bill without disturbing the under jaw, or unclosing its throat. This mandible is provided with a long projecting tooth, not unlike the long callosity in the beak of the *Emberiza Milliaris*, or common Bunting, which is received in a hollow in the under mandible; by means of this tooth the bird retains its prey, which might otherwise slip from its grasp.

The under mandible is admirably constructed, so as to admit of a most astonishing degree of expansion laterally. It consists of five separate pieces, or bones, viz. the tip or socket in which the two long side bones play, those two side bones and two other shorter ones which connect these with the skull, just beneath the eyes. It is difficult to explain exactly the mechanical operation of this construction; perhaps I shall best convey an idea of it by saying, that when I placed the bird on its back, and pressed my finger strongly against the tip I have mentioned, the lower jaw expanded to a considerable width, the bones I have attempted to describe assumed very much the shape of the gable of a house; and the entrance to the pouch

opened in such a manner as to have enabled the bird to swallow a fish apparently much broader than its own head; this, in fact, is necessary, as the bird preys much on flat fish. It is said that, in China, the natives train this bird, or one of a corresponding species, to fish for them, permitting it to dive to a considerable depth, and, when it rises again, compelling it to disgorge from its pouch the fish it had swallowed.

Several years ago, I took a pair of these birds from a nest among the rocks of Howth, and kept them for nearly two years, by which time they had attained their full growth. They were pleasant pets enough, unless when pressed by hunger, but then they became quite outrageous, and screamed most violently; when satisfied with food they slept, roosting on a large stone trough placed for holding water. But woe to the man or beast who attempted to approach them when hungry. It happened once that a gentleman's servant went in to look at them while in this state; he wore a pair of red plush livery breeches, which immediately caught the attention of the birds, I having been in the habit of feeding them with livers and lights; the consequence was, they made such a furious charge that I had to run to his assistance with a stick, and, even so, did not beat them off without difficulty. Their attack on dogs, cats, and poultry, if unprotected, was always fatal. They fought at once with their bills, wings, and claws, screaming frightfully all the time. In fact, the cause of my parting with them was their having destroyed a fine Spanish pointer; he had incautiously strayed into the place where I kept them, and they immediately flew at him, and attacked him in front and rear; his loud howlings brought me to his aid. I was astonished to find they had got him down; and, before I could rescue him from their fury, they had greatly injured him in one of his shoulders, so much so that he afterward died of the wound. This so grieved me that I gave them away to an English gentleman.

I hope you will consider the above worthy of a place in the columns of your truly national publication, in the well-doing of which, I assure you, I feel much interested.

I am, Sir, your obedient servant,
Suffolk-street. RICHARD GLENNON.

ANTIQUITY OF IRISH MUSIC.

TO THE EDITOR OF THE DUBLIN PENNY JOURNAL.

SIR—I have been perusing your Journal, here, with much pleasure, and particularly those portions of it devoted to the subject of *Ireland's music*. That the antiquity of Irish music has been much underrated by Mr. Moore, as represented in your Journal, I have been long convinced, but that this, my humble, though sincere opinion, may not be considered as at all intended to take from the fame and character of that eminent genius, permit me to declare that next to the honour of being a native of the country where first such exquisite music was breathed, do I estimate the pride of being born in the same isle with our talented and accomplished bard.

But, in truth, I am persuaded Mr. Moore can scarcely now retain the opinion on that subject which unluckily, and, perhaps, inadvertently, found a place in his "prefatory letter" to the *Melodies*. The late Dr. Spray, though an Englishman, was a decided maintainer of the antiquity of Irish music; and he frequently told me of his having communicated his sentiments to Mr. Moore, and especially with reference to one air, he offered to shew him by internal evidence to be found in the composition or notations of the air itself, that it was, at least, *upwards of twelve hundred years old!* These facts, also, as to other extremely ancient airs lately brought forward in your Journal, he, by this time, at least, if not heretofore, must have got some traces of. Surely the esteemed poet cannot but have read Cambrensis, who was sent over into Ireland by Henry the Second, with his son, Prince John, in 1185. So numerous are Cambrensis' misrepresentations and libels on the Irish character, that it detracts from the high name of Randolph de Glanvilla, the venerable compiler of British Common Law, then principal adviser of his Sovereign, to have permitted such a man to accompany the Prince: still

this very Cambrensis on his arrival in Ireland *six hundred and forty-eight years ago*, was so astonished, yet so charmed, with the Irish music, that in this instance his malignity ceased, and a large space in his work is devoted to an attempt to describe the accomplishments of Irish minstrels, and the irresistible effect of their fascinating science. This was six hundred and forty-eight years ago! and yet Mr. Moore assigned some two hundred and fifty years as the age of our "civilized" music. I remember, as a boy, seeing the harp of Brian Boroihme, which exists in Dublin, and the fact that such a thing *was made and used in Ireland more than eight hundred years ago* and nearly two hundred years before English connexion commenced, was one of the first facts that made me suspect there was much suppression of truth in the theory that assigns a modern date to our music. Standing before that venerable relic of Ireland's former civilization and refinement, Mr. Moore must have felt that there had been once an era, and an early one, when scientific men and "civilized airs," such as that harp was strung for, were known and encouraged in Ireland.

There are preserved in Lambeth Palace, where I perused them, certain laws passed in Ireland, in the year 1366, whereby the "Irish Minstrels," as they are specially called, were ordered to be excluded from those districts which belonged to the English Government, under pain of imprisonment and forfeiture of the instruments of their Minstrelsy—"les instrumens de leur Ministrallie." In these statutes, which have not been given by even the latest writers on Irish music, I should add, there are no less than six classes of minstrels mentioned by name, a classification that bespeaks great proficiency and variety in Irish minstrelsy so far back as four hundred and sixty-seven years since; and it is to be observed that the reason recited for expelling them, was their discovering the secrets and privities of the Government districts—a fact which inferentially establishes their accomplishments to be of the higher order, when they could procure them ingress and influence even amongst an hostile people. Their influence, however, in spite of such laws, rapidly increased, and in many years afterwards, King Henry the Sixth issued a commission, with the advice of his Lieutenant, Sir Thomas Stanley, wherein he names several classes of Irish minstrels, with others, as coming into the English districts, and receiving great gifts and goods from his lieges, for exercising their minstrelsy contrary to law, while, at the same time, as the King says, they were exploring the secrets of the district to report them to their countrymen; wherefore he orders the Marshal to enforce the above laws against them, to imprison them, seize on their horses, harness, gold, silver, goods, and the instruments of their minstrelsy, "Instrumentalia Ministralliarum suarum," and keep them for his the Marshal's proper use. Here we find the King obliged to stimulate the Marshal to enforce this law by giving him the pecuniary rewards, which under the statute ought to go to the Crown; we also see that though such statute existed, yet it had become inoperative, or was not enforced, for the King mentions that his liege people were conferring great rewards "Grandia Dona et Bona" upon those Minstrels: and coupling these facts, it is clear that the proscribed were influential by their professional talent and skill only; for between them and those "Lieges" who were rewarding them no community of language, interests, or connexions existed.

The political history of the Irish minstrels, it is evident, has not yet been written; and when its materials are collected, Mr. Moore, as well as others, will admit that the men who could cause such intense anxiety to Government for several centuries, not by force of arms, but by music only, must have been an influential and accomplished race. At present, however, one circumstance may be here alluded to, without, perhaps, encroaching too much on your limits: Queen Elizabeth aimed at the entire extirpation of the children of song; without actively forwarding the Royal intentions no favors of state could be had, and, in consequence, Lord Barrymore and others accepted commissions under the Great Seal to *hang the harpers, destroy their instruments, &c.*, whenever found. That these commissions, (one of which I lately glanced at), were rigidly executed, the favours afterwards conferred by Eli